Geochimica et Cosmochimica Acta

JOURNAL OF THE GEOCHEMICAL SOCIETY

EXECUTIVE EDITORS

C. W. CORRENS, *Göttingen* E. INGERSON, *Austin, Texas*

L. R. WAGER, *Oxford*

EDITORS

L. H. AHRENS, *Capetown* H. C. UREY, *La Jolla, Calif.*

S. R. NOCKOLDS, *Cambridge* JOHN VERHOOGEN, *Berkeley, Calif.*

A. P. VINOGRADOV, *Moscow*

EDITORIAL ADVISORY BOARD

EUROPE

T. Barth, *Oslo*
L. Capdecomme, *Toulouse*
E. J. Conway, *Dublin*
P. Eskola, *Helsinki*
P. Gallitelli, *Modena*
A. Hadding, *Lund*
O. Hahn, *Göttingen*
H. W. Harvey, *Plymouth*
F. Heide, *Jena*
A. Holmes, *Edinburgh*
W. Q. Kennedy, *Leeds*
Ph. H. Kuenen, *Gröningen*
S. Landergren, *Stockholm*
F. Machatschki, *Vienna*
A. Muir, *Harpenden*
J. Orcel, *Paris*
E. Raguin, *Paris*
E. Reinhard, *Basle*
Th. G. Sahama, *Helsinki*
C. E. Tilley, *Cambridge*
T. Vogt, *Trondheim*
W. Wahl, *Helsinki*

AMERICAN CONTINENT

A. F. Buddington, *Princeton*
D. Guimãraes, *Belo Horizonte*
G. E. Hutchinson, *New Haven*
B. H. Mason, *New York*
F. Whipple, *Cambridge*
R. Wildt, *New Haven*
H. S. Yoder, *Washington*

FAR EAST

T. Watanabe, *Tokyo*

VOLUME 15
1959

PERGAMON PRESS LONDON · NEW YORK · PARIS · LOS ANGELES

CONTENTS

Nos. 1/2

HITOSHI SAKAI and KAZUO SATŌ: Isotopic composition of the common lead of Japan . . 1

P. W. RICHARDSON and H. E. HAWKES: Adsorption of copper on quartz 6

R. COULOMB, M. GOLDSZTEIN and M. LE MERCIER: L'uranium dans quelques granites français 10

A. E. RINGWOOD: The constitution of the mantle—II. Further data on the olivine–spinel transition 18

MARJORIE HOOKER: Data of rock analyses—IV. Icelandic periodical and serial literature. Bibliography of rock analyses 30

H. SAKAI and H. NAGASAWA: Fractionation of sulphur isotopes in volcanic gases . . . 32

R. W. STOENNER and J. ZÄHRINGER: Potassium–argon age of iron meteorites . . . 40

H. F. PHILLIPS and I. A. BREGER: Isolation and identification of an ester from a crude oil . 51

R. F. CONLEY and W. M. BUNDY: Mechanism of gypsification 57

G. KULLERUD and G. DONNAY: Natural and synthetic ferroselite. A roentgenographic mimesis of rammelsbergite 73

A. P. VINOGRADOV: The isotopic composition of rocks of the earth and of meteorites . . 80

HELMUT G. F. WINKLER und HILMAR VON PLATEN: Experimentelle Gesteinsmetamorphose—II. Bildung von anatektischen granitischen Schmelzen bei der Metamorphose von NaCl-führenden kalkfreien Tonen 91

R. M. GARRELS and C. R. NAESER: Equilibrium distribution of dissolved sulphur species in water at 25°C and 1 atm total pressure 113

H. T. EVANS, JR. and R. M. GARRELS: Thermodynamic equilibria of vanadium in aqueous systems as applied to the interpretation of the Colorado Plateau ore deposits 131

Geochemical Note

R. K. WEBSTER, J. W. MORGAN and A. A. SMALES: Caesium in chondrites 150

Letters to the Editors:

ERIK ERIKSSON: On the isotopic composition of the ammonia and the nitrate ion in rain . 153

T. C. HOERING: A reply to the preceding note by E. Eriksson 154

R. EULER und E. HELLNER: Hydrothermale und röntgenographische Untersuchungen an gesteinsbildenden Mineralen—V. Uber hydrothermal hergestellen Osumilith . . . 156

G. J. WASSERBERG and R. BIERI: The A^{38} content of two potassium minerals . . . 157

D. M. SHAW: A vanadium–calcium spectral line coincidence at 3185 Å and its effect on vanadium abundance data 159

Book Review:

"The Threshold of Space: The Proceedings of the Conference on Chemical Aironomy" Edited by M. ZELIKOFF (reviewed by G. F. SCHILLING) 162

Papers to be published in future issues 163

No. 3

R. J. W. MCLAUGHLIN: Geochemical partition in two illitic clays 165

J. P. FORSMAN and J. M. HUNT: Insoluble organic matter (kerogen) in sedimentary rocks . 170

E. C. WALKER, F. CUTTITTA and F. E. SENFTLE: Some natural variations in the relative abundance of copper isotopes 183

A. E. RINGWOOD: The constitution of the mantle—III. Consequences of the olivine–spinel transition 195

T. ISAACS and R. ROY: The α–β inversions in eucryptite and spodumene 213

I. FRIEDMAN and R. L. SMITH: The deuterium content of water in some volcanic glasses . 218

M. D. KARKHANAVALA: On radioactive uraniferous iron oxides 229

S. A. EL WARDANI: Marine geochemistry of germanium and the origin of Pacific pelagic clay minerals 237

Book Review:

"Gmelins Handbuch der anorganischen Chemie. 8 Auflage. System Nummer 28: Calcium. Teil A—Lieferung 2." (reviewed by C. W. Correns) 255

Papers to be published in future issues 256

No. 4

A. E. Ringwood: On the chemical evolution and densities of the planets 257

K. S. Heier and S. R. Taylor: Distribution of Li, Na, K, Rb, Cs, Pb and Tl in Southern Norwegian Pre-Cambrian alkali feldspars 284

A. Heydemann: Adsorption aus sehr verdünnten Kupferlösungen an reinen Tonmineralen . 305

S. Ďurovič: Contribution to the lognormal distribution of elements 330

R. A. Edge, R. R. Brooks, L. H. Ahrens and S. Amdurer: Some reconnaissance observations on the combined use of ion-exchange enrichment and spectrochemical analysis for the determination of trace constituents in silicate rocks 337

Marjorie Hooker: Data of rock analyses—V. Australian periodical and serial literature . 342

Geochemical Note:

S. R. Taylor and L. H. Ahrens: The significance of K/Rb ratios for theories of tektite origin 370

AUTHOR INDEX TO VOLUME 15

(B.R.) denotes a book review

Ahrens L. H.	337, 370
Amdurer S.	337
Bieri R.	157
Breger I. A.	51
Brooks R. R.	337
Bundy W. M.	57
Conley R. F.	57
Correns C. W.	(B.R.) 255
Coulomb R.	10
Cuttitta F.	183
Donnay G.	73
Ďurovič S.	330
Edge R. A.	337
Eriksson E.	153
Euler R.	156
Evans H. T., Jr.	131
Forsman J. P.	170
Friedman I.	218
Garrels R. M.	113, 131
Goldsztein M.	10
Hawkes H. E.	6
Heier K. S.	284
Hellner E.	156
Heydemann A.	305
Hoering T. C.	154
Hooker M.	30, 342
Hunt J. M.	170
Isaacs T.	213
Karkhanavala M. D.	229
Kullerud G.	73
McLaughlin R. J. W.	165
Mercier M. le	10
Morgan J. W.	150
Naeser C. R.	113
Nagasawa H.	32
Phillips H. F.	51
Platen H. von	91
Richardson P. W.	6
Ringwood A. E.	18, 195, 257
Roy R.	213
Sakai H.	1, 32
Satō K.	1
Schilling G. F.	(B.R.) 162
Senftle F. E.	183
Shaw D. M.	159
Smales A. A.	150
Smith R. L.	218
Stoenner R. W.	40
Taylor S. R.	284, 370
Vinogradov A. P.	80
Walker E. C.	183
Wardani S. A. el	237
Wasserberg G. J.	157
Webster R. K.	150
Winkler H. G. F.	91
Zähringer J.	40

GEOCHIMICA ET COSMOCHIMICA ACTA

EXECUTIVE EDITORS

PROF. C. W. CORRENS *Sedimentpetrographisches Institut der Universität, Lotzestr.* 13, *Göttingen, Germany*
PROF. E. INGERSON *Department of Geology, University of Texas, Austin* 12, *Texas, U.S.A.*
PROF. L. R. WAGER, F.R.S. *Department of Geology and Mineralogy, The University Museum, Oxford, England*

EDITORS

PROF. L. H. AHRENS *Department of Chemistry, University of Capetown, Rondebosch, Cape Province, South Africa*
DR. S. R. NOCKOLDS *Department of Mineralogy and Petrology, The University, Cambridge, England*
PROF. H. C. UREY, For. Mem. R. S. *University of California, La Jolla, California, U.S.A.*
DR. JOHN VERHOOGEN *Department of Geology, University of California, Berkeley, California, U.S.A.*
PROF. A. P. VINOGRADOV *Vernadsky Institute, Moscow, U.S.S.R.*

INFORMATION FOR CONTRIBUTORS

I. GENERAL

1. Papers on geochemistry should be submitted to the appropriate Executive Editor. Papers submitted for publication will naturally be judged from the standpoint of scientific originality and novelty. Technical details of apparatus used in scientific investigation can, however, be presented in brief notes. Critical comments or preliminary results requiring early publication should be submitted as Letters to the Editors. Where possible, letters should be confined to 500 words. The preparation of progress reports and review articles will be invited by the editors from time to time. The journal appears as independent and complete numbers, which are combined into volumes of about 300 pages.

2. Only papers which have not been previously published can be accepted. Authors must agree not to publish elsewhere a paper submitted to and accepted by *Geochimica et Cosmochimica Acta*.

3. Fifty reprints of each paper are provided free. Additional copies can be purchased if ordered at the time the first proofs are returned. A reprint order form will accompany first proofs.

II. SCRIPT REQUIREMENTS

1. Scripts must be written in one of the three official languages—English, French or German.

2. The script should be typed (not a carbon copy). The text must be ready for printing and should be carefully checked for errors. Authors will receive proofs for correction.

3. Illustrations should accompany the script, mounted on separate sheets. Line diagrams that require to be redrawn should include all relevant details. Half-tone illustrations should be restricted to the minimum necessary. Photographs should be enlarged sufficiently to permit their clear reproduction, and if words or numbers appear on them, two copies should be sent, one clearly printed and the other without inscription. All illustrations should be provided with descriptive legends, which should be given on a separate sheet. Any lettering on diagrams—other than Greek letters, symbols, etc.—should be stencilled and should be sufficiently large and bold to permit reproduction when the diagram has been reduced to a size suitable for inclusion in the journal.

4. References in the text should be given by quoting the author's name and year of publication, i.e. AHRENS (1952). **Full references should be listed at the end of each paper, in alphabetical order, in the following manner:**

AHRENS, L. H. (1952) The use of ionization potentials—I. Ionic radii of the elements. *Geochim. et Cosmochim. Acta* **2**, 155–169.

and should include the full title of the article, standard abbreviated title of the journal, year, volume number and inclusive page numbers. References to books should include the total number of pages.

5. The text of articles submitted should be concise and in a readily understandable style. The technical description of the methods used should only be given in detail when such methods are new. The essential contents of each paper should be briefly recapitulated in an abstract in English. Such an abstract may, however, be submitted by the author in the language of the original typescript for translation into English by the editorial staff.

6. To conserve space, authors are requested to mark less important portions of the paper (such as description of methods, record of experimental results, etc.) for printing in smaller type.

7. Indices of refraction should be denoted by the symbols α, β, γ, ω, ε, n and vibration directions by X, Y, Z, O and E.

PERGAMON PRESS LTD.

4 & 5 FITZROY SQUARE, LONDON W.1. 122 EAST 55TH STREET, NEW YORK 22, N.Y.